SD-20

THE DOD QUALIFICATION PROGRAM

(How to use it)

Qualified Products List (QPL)

Qualified Manufacturers List (QML)

DEFENSE STANDARDIZATION PROGRAM OFFICE
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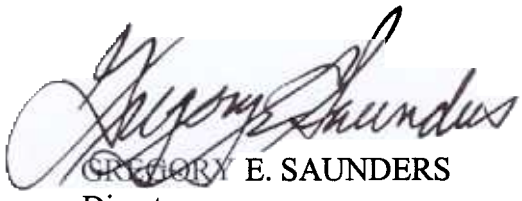
SDMP

Foreword

The Defense Standardization Program Office (DSPO), under the authority of DoD Instruction 4120.24, issues Defense Standardization Program (DSP) policies and procedures. Policies and procedures for the DSP are contained in DoD 4120.24-M. This guidance document amplifies those policies and procedures to assist in the development, implementation and maintenance of DoD approved qualification programs. This document is intended to lead an agency or individual through the thought processes of establishing a new DoD qualification program.

Applicants desiring to apply for qualification and listing on the associated Qualified Products List (QPL) or Qualified Manufacturers List (QML) should contact the responsible DoD Qualifying Activity (QA).

Recommended changes to this publication should be sent to the Defense Standardization Program Office, Attn: J-330, 8725 John J. Kingman Road, Suite 4235, Ft. Belvoir, VA 22060-6221.



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SECTION 1:

BACKGROUND AND HISTORICAL PERSPECTIVE

The Department of Defense (DoD) Product Qualification Program, in use for over 50 years, is a recognized methodology for qualifying products, processes, and materials to specified performance, quality, and reliability levels. Listings of qualified manufacturers and products provide the department, other federal and civilian agencies, and contractors with a recognized cadre of manufacturers and products.

The DoD Product Qualification Program is prescribed by statute (10 USC, Section 2319) and by regulation (Federal Acquisition Regulation, Subpart 9.2). These statutes and regulations are codified in DoD policy and procedures (DoD 4120.24-M, *Defense Standardization Program Policies and Procedures)*.

DoD 4120.24-M provides overall policies and procedures to the military services, and the defense, federal, and civilian agencies as they promulgate their respective qualification programs.

Once a manufacturer has successfully qualified its products or processes and materials, the qualified products are listed by the responsible Qualifying Activity (QA) on a qualified listing. This special list then can be easily used for procurements by the military services and their equipment contractors and by logistic support agencies as well as the worldwide industrial base. Requisite levels of quality, as well as the detailed qualification requirements, are delineated in a defense or federal specification, or a non-government standard to assure a broad competitive supplier base.

Of course, the success of any program is predicated on technical competence and effective administration by the responsible QA as well as the integrity of participating companies.

The following qualification programs are currently authorized under the DoD Standardization Program:

Qualified Products List (QPL)

Qualified Manufacturers List (QML)

These two programs will be discussed in more detail in Section 5.

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SECTION 2:

THE PURPOSE AND BENEFITS OF QUALIFICATION PROGRAMS

PURPOSE

The purpose of qualification is to verify that a product, or family of products, and manufacturers meet specified performance, quality, and reliability requirements. Qualification takes place independent of any contract action.

Up-front qualification of products and manufacturers' capabilities, provides a cost effective and fair way to determine if the products can meet the specified requirements before they are used in a specific application. Qualification allows comprehensive performance, quality, and reliability review and verification. Use of qualification can avoid delays in procurement actions.

Qualification programs can:

Increase the likelihood of product performance, quality and reliability without delaying a specific contract or procurement action.

Assure that a new technology, product or family of products can initially meet a specified performance, quality, and reliability level.

Assure that a manufacturer's product design, manufacturing process, and quality and reliability control program provide items that meet a specified level of performance on a continuous basis.

BENEFITS

The benefits of a successful qualification program can be significant to both the government and private sector. The QPL and QML qualification programs have a wide variety of stakeholders. The stakeholders consist of the military services, their original equipment manufacturers that are building military weapon systems, defense agencies, and various other federal and civilian agencies. These stakeholders all use QPLs and QMLs to procure products quickly and efficiently. The actual product manufacturers are also major beneficiaries of a successful DoD product qualification program because they can standardize on a single product design, manufacturing and test flow, and quality conformance system for both military and commercial users.

Through a qualification program, manufacturers can develop a single, cost effective, dual use program for manufacturing, qualification, testing, and quality conformance inspection that is designed for a specific product and is recognized throughout the world. This approach avoids delays, duplication, and additional costs for all the stakeholders.

The qualification programs are particularly significant in this period of military downsizing. As the military market dwindles, some product manufacturers would simply drop out of the DoD market to pursue larger commercial business sectors if the qualification program didn't exist. Creating a single set of design, manufacturing, testing, and conformance requirements allows worldwide users to benefit from a high quality and high reliability product from a known manufacturing base.

A successful qualification program reduces waste and duplication of effort. It promotes good business practices and healthy competition.

REDUCES WASTE AND DUPLICATION

A successful DoD qualification program:

Reduces redundant (duplicate) product qualifications.

Reduces acquisition time and product costs.

Reduces a manufacturer’s production time.

Reduces duplicate and non-standard testing requirements. (Some of which may actually reduce reliability.)

Replaces duplicate assessments with a single DoD and industry assessment program.

Reduces government oversight.

Eliminates need for first article inspection and reduces need for contract quality provision costs.

PROMOTES GOOD BUSINESS PRACTICES

A successful qualification program promotes good business practices when it:

Identifies known suppliers who have demonstrated that they can meet requirements throughout the acquisition and logistic cycle.

Establishes an objective and cost-effective way to establish a long-term technical relationship with a manufacturer.

Detects unauthorized product substituting, counterfeiting, or other fraudulent activity and helps the legal process combat these activities.

Promotes standardization across DoD and the private sector.

Helps attract and maintain a manufacturing base even in the dwindling DoD market.

Helps prolong manufacturing sources and reduces Diminishing Manufacturing Sources (DMS) problems by concentrating procurement around a single (standard) product type.

Allows non-technical personnel to procure complex products confidently and with reduced risk.

Validates processes that ensure that product quality and reliability is built into the product.

Allows for test optimization (including alternate or reduced testing) with proper engineering oversight.

SUPPORTS EFFICIENT ACQUISITION

A well planned and efficiently administered qualification program supports efficient acquisition of products because it:

Is a cost effective way to improve the likelihood of continuous product compliance with specified requirements.

In some instances, promotes rapid insertion of new technologies into DoD systems and equipment.

Maintains configuration control during product redesigns and manufacturing process changes.

Allows for faster problem identification and resolution for major product quality problems.

Makes effective use of the Government & Industry Data Exchange Program (GIDEP) alert system to help assure proper customer notification if field problems surface.

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SECTION 3:

WHEN QUALIFICATION SHOULD BE USED

A qualification program is not a universal solution to product quality and availability issues. When deciding if a qualification program is appropriate for a particular product or manufacturing capability, follow a practical thought process.

PRELIMINARY QUESTIONS

The following questions, discussed in detail below, highlight items to consider before applying a qualification program to a specific technology, product, or manufacturer or distributor capability:

Does the technology or application warrant a qualification program?

Does the procurement level (quantity, frequency, etc.) warrant a qualification program?

Do you have adequate resources—or can other available resources be used—to properly manage and enforce the qualification requirements?

Are there at least two sources willing to qualify?

TECHNOLOGY OR APPLICATION

The first step is to determine if the technology, products, or manufacturing base warrants a qualification program review. Consider these points when making this determination:

In the absence of a qualification program, will the time needed to conduct the tests required to demonstrate that the product manufacturer can meet the performance, quality and reliability requirements result in excessive delays if applied during each contract or procurement action? Will such delays result in added costs to present and future acquisitions? If so, a qualification program may be in order.

Will special equipment be needed to conduct the required qualification tests? If so, a qualification program may be in order. A qualification program that allows selected tests to be performed initially or periodically, or at a designated laboratory (either government or industry), may resolve this situation.

Is the application one in which reduced performance or failure of the item may be catastrophic to the mission, equipment, safety, or life? If so, a qualification program may be required. A qualification program can be developed and the qualification requirement for the program can be documented in the specification, which increases the likelihood of

acceptable product performance, quality and reliability, thereby reducing the risk of failure.

Note however that the ability of a qualification program to achieve the above results is dependent on how well the program requirements have been developed and implemented. Specific technology or product manufacturing bases require specifically designed programs. Subsequent enforcement and oversight of the qualification program is also key to its success in achieving the above objectives.

PROCUREMENT LEVEL

The second step is to determine if the procurement level warrants a qualification program. Product manufacturers typically pursue qualification only if they have determined that a profitable market exists. Product manufacturers base their qualification plans on existing use and future projections of usage of their products.

Therefore, review the anticipated procurement levels for the product to determine if the expected lifetime buys (quantity) and the frequency of the procurement actions will be sufficient to interest a manufacturer in qualifying a product. If the product will be procured infrequently or the quantities are relatively small, then a first article test requirement or quality assurance provision in the specification or a specific contract or procurement action may be a better solution. On the other hand, a qualification program may be in order if:

The quantities of the buy, or the frequency of buys, will be relatively high and are expected to last over several years.

Product changes or improvements are expected to be frequent. A qualification program may be the most cost effective approach to maintain continuous configuration control and demonstrate that the product can continuously meet this application requirement as well as the performance, quality and reliability requirements.

In addition to benefits to the DoD, attention should be given to how the industrial, civilian and federal communities are impacted by the implementation and maintenance of a qualification program. If the overall industrial community will benefit from the qualification program because of reduced testing, improved quality and reliability, reduced surveillance (auditing), and/or reduction in duplicate product qualifications, then that is added reason why a qualification program may be beneficial.

RESOURCES

The third step is to establish whether or not sufficient resources will be available to maintain a qualification program. The ability of a qualification program to ensure the requisite level of performance, quality and reliability is dependent on the competence and commitment of the qualifying activity. Consequently, a resource commitment is necessary.

The level of resource commitment is directly related to the qualification program requirements. Resources will be needed to implement, enforce, and monitor the qualification program requirement. For example, resources to review qualification data, perform facility (plant) assessments, and conduct the subsequent retention and follow-on maintenance activities must be considered before a qualification program is established. If there is not a commitment to support the qualification program, then it doesn't make sense to implement one.

When analyzing the pros and cons of establishing a qualification program, a comparison between the resources required for qualification versus other techniques should be reviewed and weighed. It can sometimes be very difficult to quantify resources needed to maintain qualification and compare them to the additional resources that would be used throughout the acquisition and logistics process when a qualification program is not properly resourced. The following are some of the variables that are difficult to quantify but are important to consider:

- Improved quality and reliability of product throughout the life cycle of the equipment/hardware. This will reduce acquisition and logistics resource needs and cost.
- Potential risks of not having a qualification program (or having a poorly administered qualification program).
- Consequence and cost of a component failure to the mission, equipment, safety and/or life.
- Added cost generated and passed along to DoD because of duplicate or multiple product qualification, assessments and follow-on maintenance programs that may be required by the services, defense contractors, and logistics activities.
- Added cost generated in the acquisition and logistics cycle because of unknown product performance, quality and reliability. It should be recognized and considered that to determine product performance, quality and reliability on each contract or procurement action throughout the acquisition and logistics cycle can be a very costly process for the DoD and civilian agencies.
- Added quality assurance and technical resources required to perform additional quality assurance inspections in each contract or procurement action can be very costly and resource intense. The extra cost across the total life cycle should be considered.

All the above elements translate into costs for the DoD and must be evaluated to determine the cost effectiveness of including a qualification provision in a specification.

FOLLOWUP QUESTIONS

If your answers to the preceding questions convince you that qualification is the best route to take, address these questions next:

Does a QPL or QML best fit the technology?

What elements or requirements should be included into the qualification program?

Can the qualification program be justified in accordance with DoD 4120.24-M?

The issues raised by each of these questions will be discussed in the remaining sections of this document. The goal is to assist you in the development, implementation, justification, and maintenance of a qualification program.

SECTION 4:

QUALIFICATION PROGRAM RESPONSIBILITY

The responsibility for properly administering a Qualification Program rests with the designated qualifying activity (QA). The QA is expected to review design data, manufacturing processes and changes, qualification test data, on-going conformance testing, and qualification retention data. It is also responsible for reviewing whatever else may be deemed necessary to determine continued compliance with the specified performance and qualification requirements. In addition, in many technology areas, the QA may need to perform initial or periodic surveillance of the manufacturer's operations.

For QPLs and QMLs, the qualification requirements must be specified in the applicable federal or defense specifications. Non-government standards (NGSs) can also specify a qualification requirement for which the government may elect to establish and maintain a QPL or QML if an industry qualification program is not available.

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SECTION 5:

QUALIFICATION TOOLS

If a QA determines that a qualification program is needed then the next step is to determine what type of qualification program will best fit the selected product or technology. There is a product qualification program (QPL) and a process/material qualification program (QML). The elements of each are discussed below.

QUALIFIED PRODUCTS LIST

A QPL will normally be appropriate for products with a stable design and manufacturing process that will be produced for an extended period of time with only infrequent major changes to their design or manufacturing processes. Some product designs and manufacturing changes or improvements can be expected. These are easily handled under a properly designed QPL with a baselined change control program, product design and requalification program.

If properly designed and implemented, the QPL program not only will verify that a manufacturer's products meet the specified requirements initially but also on a continuing basis. Properly designed may include rigorous requirements for maintenance of qualification for some kinds of products or minimum for other kinds. If a minimal qualification program (for example, no ongoing conformance testing or no periodic re-audits) is designed and implemented, the QPL could be only a one time proof that manufacturers products can meet the specified requirements at the time the qualification testing and/or inspections are performed. The product, the industrial base, the intended applications, and the availability of resources should be carefully considered in order to develop a qualification program that meets DoD needs.

Specific QPL requirements for a particular product or technology area will be dependent on the particular technology, product or industrial base. The specific QPL requirements must be specified in the applicable defense or federal specification or NGS.

Section 6 outlines some of the elements that have been successfully used on other qualification programs.

QUALIFIED MANUFACTURERS LIST

A QML is the result of a process and material qualification program performed in advance of and independent of contract or procurement action. The QML is a formal, yet flexible, qualification process for qualifying a set of materials and processes rather than qualifying individual products or families of products. These materials and processes to be qualified must be carefully selected so that once qualified, they will be representative of the actual products produced.

If properly designed, the qualified processes and materials will assure the out-going product meets all the specified requirements. The set of materials and processes may be qualified by selecting a worst case test vehicle or worst case representative sample of the actual product that contains all potential combinations of materials and processes that may be subsequently used in the products covered by the qualification. Consequently, once the materials and processes have been successfully qualified, then all products using that set of materials and processes are considered qualified and available for listing on the QML.

A QML will typically be appropriate for products that have rapid technology advancements, many variations or custom designs, rapid product design and manufacturing changes, and short technology life cycles or continuous advances in performance, quality and reliability that would make individual or family product qualifications (QPL) impractical, slow, or excessively costly.

Specific QML requirements may vary depending on the particular product technology or industrial capability. Section 6 outlines some of the QML elements that have been successfully used on other qualification programs. Review them for possible applicability to your product or technology. Finally, the specific qualification requirements and tests must be specified in the applicable defense or federal specification or NGS.

Table I provides a summary of the DoD qualification programs.

TABLE I. SUMMARY OF DIFFERENCES BETWEEN QUALIFICATION PROGRAMS

Type	Qualification	Approving Authority	Document	Type of Procurement document	Application
QPL	Individual products or families of products	DepSO	Defense/Federal Spec/NGS	Defense/Federal Spec/NGS	Stable product, medium-high volume. DoD/Industry will benefit from standardization
QML	Set of processes, materials or worse case designs	DepSO	Defense Spec/NGS	Defense Spec*/NGS	Low-high volumes, custom or short product life cycles. DoD industry will benefit from standardization

*In the microelectronic technology area, Standard Microcircuit Drawings (SMDs) are used as the device specification in conjunction with general defense specifications.

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SECTION 6:

CONSIDERATION OF QUALIFICATION ELEMENTS

When designing a qualification program, carefully consider the technology and the individual products. The performance, quality and reliability aspects of the products must be fully understood and taken into consideration as the qualification program is developed. The design and failure modes that would contribute to reduced performance, quality, and reliability must be addressed in the qualification program to ensure that failures do not occur in military applications. Design, manufacturing, testing, quality controls, and product quality and reliability assessment necessary to demonstrate that the product initially and continuously meets the specified requirements must be addressed and included in the qualification requirement. In addition, to the greatest extent possible, intended applications and operating environments must also be understood and considered.

In order to accomplish these objectives, product design, manufacturing materials, workmanship, conformance testing, and surveillance should be evaluated. Each of these elements should be reviewed and considered for applicability to the technology and products being considered for qualification. Table II tabulates the specific elements by criticality of the application that have been successfully used in other QPL/QML programs.

PRODUCT DESIGN

Review the product design to determine what design rules, controls, and inspections are needed to assure configuration control, quality, and reliability. The qualification requirements should also determine which aspects of product design must be monitored and re-qualified as the product design changes. Major and minor changes should be defined and coupled with re-qualification procedures that will be necessary to assure that performance, quality, reliability, and form-fit-function are maintained. In some cases, the complexity of the product may necessitate establishing a product baseline consisting of a defined set of product design parameters and characteristics that are critical to the function, performance, quality and reliability of the product . All changes to that baseline must be submitted to the QA via the manufacturer's internal change control process. Changes to the baseline may require product re-qualification depending on the extent and nature of the change. The re-qualification process can range from simply validating the change, performing selected tests, to a full re-qualification.

MANUFACTURING

Review the manufacturing process to determine which steps are most critical and must be monitored, tested, and controlled during the duration of the listing to assure continuous product performance, quality and reliability. As with the product design, the manufacturing process may be complex enough to actually require that a baseline be established by the QA. In those cases, the manufacturer may be asked to submit a detailed manufacturing flow to the QA for record and review. Once reviewed, the QA certifies that manufacturer for that baselined manufacturing flow. Any changes to it would require notification to the QA and possible re-qualification. Typically, any product falling outside the baselined parameters would be prohibited from being sold or marked as a QPL or QML product.

MATERIALS

The materials and processes used in the product should be understood to determine the type of incoming inspection, testing, and traceability provisions that need to be reviewed and controlled during the qualification process. Here too, certain materials could be sufficiently critical to the ultimate performance of the product that a baseline may need to be established, just as was required for design and manufacturing. For QML, the process and materials used in the products become an integral part of the actual qualification program for the product.

WORKMANSHIP

The QA should consider any workmanship elements that need to be monitored, tested, or reviewed.

CONFORMANCE INSPECTION

Define and document qualification and on-going quality conformance (both 100% and periodic) inspection requirements. The specific qualification requirements as well as the continual conformance should be clearly specified and documented to avoid any confusion. The testing (conformance, quality, and reliability assessments) should be developed to detect and eliminate early failure modes. It should also demonstrate that the product meets the performance and reliability requirements. Any deviations, changes, or modifications to the qualification process should be addressed to all participants in an open and equitable manner to

promote competition and avoid the appearance of preferential treatment to a selected manufacturer.

The qualification process should ensure that manufacturers understand testing requirements and should verify that they have implemented a quality control system that will assure compliance with the testing requirements. Manufacturers and users should have considerable input as to the requirements as they are developed. Waivers to the specific qualification requirement or qualification program are not authorized except for an emergency situation (see the WAIVER OF QUALIFICATION paragraph in the qualification appendix of DoD 4120.24-M). Test optimization, Statistical Process Controls (SPC), and in-process monitors that will be accepted as alternate methods to achieve the same results should also be defined.

SURVEILLANCE

The QA should also determine the type, depth, scope and frequency (initial or periodic) of the assessments (audits) that will be necessary for verification. The product life cycle, complexity, and criticality should be reviewed to determine the frequency of the assessments that are needed and whether they should be scheduled assessments, unannounced assessments, or a combination. The QA should determine if it will perform the assessments, or use or include other technical experts within or outside the DoD. The process used to establish the audit interval should be documented. Specific guidelines that will be used during the assessment process should be developed and documented.

Table II tabulates some elements that should be considered when developing a new qualification program. The elements are based on the type of application and whether they are typically specified as a requirement during initial qualification, periodic conformance and/or after a major design change has occurred.

The table is not meant to be an inclusive list of all possible elements. It is a tabulation of elements that have proven to be effective in other qualification programs. These elements should, as a minimum, be considered when a new qualification program is developed.

The following symbols apply to the table:

I = Initial requirement

P = Periodic maintenance requirement

R = At time of major product design change

X = Recommend

O = Optional

NA = Not applicable

Class I - Products that are safety critical. A high level of assurance of performance, quality and reliability is required. The qualification program should be intensive. Little or no risk for failures can be tolerated in the intended application.

Class II - Products are critical and the need for assurance of performance, quality and reliability requirements is high. The qualification program should be moderate to intensive. Low or moderate risk of failures can be tolerated in the intended application.

Class III – Need for assurance of product performance, quality and reliability requirements is moderate to high. The qualification program should be moderate. Moderate risk of failure can be tolerated in the intended application.

Class IV – Need for assurance of product performance, quality and reliability requirements is low to moderate. The qualification program should be low to moderate. A moderate to high degree of risk can be tolerated on the intended application.

Table II. Possible Elements of a Qualification Program

Elements to Consider	**Class I**			**Class II**			**Class III**			**Class IV**		
	I	P	R	I	P	R	I	P	R	I	P	R
Product Verification (meets requirements)												
Product design verified	X	X	X	X	X	X	X	O	X	X	O	O
Qualification testing required to verify product design												
100% testing required	X	X	X	X	X	X	X	O	X	X	O	O
Sample testing required	X	X	X	X	X	X	X	X	O	X	O	O
Product quality reliability assessments	X	X	X	X	X	X	X	O	X	X	O	O
Testing performed at												
Government site	O	O	O	O	O	O	O	O	O	O	O	O
Manufacturer's plant or commercial lab	X	X	X	X	X	X	X	X	X	X	X	X
Witnessed												
Manufacturer's quality control witnessed	X	X	X	X	X	X	X	X	X	X	X	X
Government witnessed (QA/DCMA)	O	O	O	O	O	O	O	O	O	O	O	O
Third party witnessed	O	O	O	O	O	O	O	O	O	O	O	O

Elements to Consider	Class I			Class II			Class III			Class IV		
	I	P	R	I	P	R	I	P	R	I	P	R
Plant Assessments/Audits (testing, quality system, SPC)												
Frequency:												
Frequent – initial and 1 or more per year	X	X	O	X								
Moderate – once every 2-3 years					X	O	O	X	O			
Infrequent – once every 3 or more years										O	X	O
Notification												
Announced/Scheduled	X	X	O	X	X	O	X	X	O	O	X	O
Unannounced	X	X	O	X	X	O	X	O	O		O	
Performed by												
Qualifying Activity only	X	X	X	X	X	O						O
Qualifying Activity or third party							X	X	O	X	X	
Third party only							O	O		O	O	O
Type of assessment												
Site	X	X	O	X	X	O	X	X	O	O	X	O
Paper	X	X	X	X	X	X	X	X	X	X	X	X
Depth of assessment												
Simplified (testing only)							X	O	O	O	X	O
Intensive complete quality/testing program	X	X	O	X	X	O						
QA assessment (audit) for Commercial Labs (Suitability to test granted)	X	X	NA	X	X	NA	X	O	NA	O	X	NA
QA assessment (audit of manufacturer plant site; Certification granted for specific tests)	X	X	NA	X	X	NA	X	X	NA	O	X	NA
Manufacturer self declaration allowed	NA	NA	O	NA	NA	X	NA	O	X	NA	X	X
Product change notification required	X	X	X	X	X	X	X	O	X	X	O	X
Quality system changes notification required	X	X	X	X	X	X	X	O	O	O	O	O
Process/manufacture change notification required	X	X	X	X	X	X	X	O	O	O	O	O
Assessment performed after:												
Equipment moves	X	O	O	X	O	O	O	O	O	O	O	O
Ownership changes	O	X	O	O	X	O	O	X	O	O	O	O
Major personnel changes	O	X	O	O	X	O	O	X	O	O	O	O
Supplier changes	O	O	O	O	O	O	O	O	O	O	O	O
Plant moves	X	O	O	X	O	O	O	X	O	O	X	O
Manufacturing Assessment (audit)												

Elements to Consider	Class I			Class II			Class III			Class IV		
	I	P	R	I	P	R	I	P	R	I	P	R
Assessment of entire manufacturing line (incoming materials, processes, procedures, etc.)												
Frequency												
Frequent – initial and 1or more per year	X	X	O	X								
Moderate – once every 2 - 3 years					X	O	X	X	O			
Infrequent – once every 3 or more years										O	X	O
Type												
Site	X	X	O	X	X	O	X	O	O	O	X	O
Paper	X	X	X	X	X	X	X	X	O	X	X	O
Other quality actions to consider												
Product design baselined	X	X	X	X	O	X	X	O	X	O	O	O
Manufacturing flow baselined	X	X	X	X	X	O	X	O	O	O	O	O
Fraud investigation	X	X	X	X	X	X	X	X	X	X	X	X
PQDR investigation	X	O		X	O		O			O		
GIDEP if warranted	X	X	X	X	X	X	X	X	X	X	X	X
Failure reporting to QA												
Manufacturer's internal failures	X	X	X	X	X	X	O	O	O	O	O	O
Field failures (external)	X	X	X	X	X	X	X	X	X	X	X	X
Documentation												
Traceability												
Lot traceability required	X	X	X	X	X	X	X	X	X	X	X	X
Production/Materials/Operator traceability required (varying degrees)	X	X	X	X	X	X	O		O	O		O
Manufacturers C of C required	X	X	X	X	X	X	X	X	X	X	X	X
Both manufacturer and distributor C of C required	X	X	X	X	X	X	O	O	O	O	O	O

PQDR – Product Quality Deficiency Report
GIDEP – Government Industry Data Exchange Program
C of C – Certificate of Conformance

SECTION 7:

HOW QUALIFICATION APPLIES TO DISTRIBUTORS

Distributors may be listed in a QPL. There are three general categories of distributors:

Stocking distributors (including value-added distributors)

Non-stocking distributors

Authorized and non-authorized distributors

This section addresses issues to be considered in deciding if it is appropriate to add distributors to a QPL. Distributors are added to QPLs as deemed appropriate by the QA.

STOCKING AND VALUE-ADDED DISTRIBUTORS

A stocking distributor maintains residual stock of the product for resale to customers. A value-added distributor actually performs selected manufacturing, assembly, or testing operations on the product. These value-added distributors add intrinsic value to products before the products are shipped to the final customer. The specifications, standards, qualification information booklets, or other sources must clearly designate what manufacturing and testing operations may be performed by the distributor.

The requirements imposed on a distributor should be carefully considered to assure that the product received is the same quality as the product supplied by the original manufacturer. For some qualification programs, stocking distributors are not permitted to alter the product except for repackaging.

Value-added distributors may be authorized by the original QPL manufacturer to mark the part with selected identifiers that will allow the customer to easily determine that value-added operations were performed. These distributors may also be authorized or required to add their own logo or brand to the part marking.

The distributors (stocking or value-added) should be required to provide all customers with traceability information that stipulates that the products are authentic and meet all specified requirements.

Traceability certificates are a good means to assure the product was produced by a qualified or approved supplier listed on the QPL. Any required traceability document must clearly specify the value-added operations that were performed. The qualification document must clearly specify any traceability certificates that must be provided to the customer.

Adding additional product markings is another good method of providing traceability. When the stocking distributor is authorized to place additional markings on the product, these markings are added to those required of the original QPL manufacturer (that is, the original product manufacturer's marking, identification, or part number). In other words, the original product markings are left on the product to assure proper traceability and to minimize product substitution or counterfeiting. If there is not enough space on the product for both the original manufacturer's marking and the distributor's added markings, the QA shall provide specific instructions on how to mark the parts to assure that traceability is maintained back to the original manufacturer.

NON-STOCKING (PASS-THROUGH) DISTRIBUTORS

Non-stocking distributors do not traditionally maintain residual stock of the product. They sell, convey, or otherwise transfer ownership of another manufacturer's products to a third party. Non-stocking distributors do not perform any value-added manufacturing, assembly, or testing operations on products.

Non-stocking distributors should be required to provide the customer with traceability documentation that stipulates that the products are authentic and meet all the specified requirements. Traceability should extend from the original manufacturer through the distributor. The traceability documents should always include certificates of traceability from the original product manufacturer.

AUTHORIZED AND NON-AUTHORIZED DISTRIBUTORS

In addition, two types of distributors—authorized and non-authorized—are routinely found in the industrial sector. Authorized distributors are those sanctioned by the original manufacturers to buy, stock, and sell their products. Authorized distributors may perform specified value-added operations on products. Authorized distributors are reviewed and audited, and otherwise approved and monitored, by the original product manufacturer to assure the parts supplied are of the same quality and reliability as those originally supplied.

Non-authorized distributors buy, stock, sell, or transfer ownership of product to end customers without the sponsorship or knowledge of the original qualified manufacturer. These non-authorized distributors are sometimes called "dealers" or "brokers."

To avoid handling damages to the product, packaging problems, and possible counterfeiting, military departments, agencies and contracting officers may want to consider buying products from authorized distributors whenever possible.

Unauthorized distributors are not listed on a QPL.

RE-BRANDING

When authorized by the QA, authorized distributors may re-brand products. Re-branding occurs when a product is remarked or branded as the distributor's own product. Because re-branding removes or obscures the original manufacturer's markings, it raises traceability issues.

These issues should be carefully considered before re-branding is authorized. Adding additional marking to the original product marking is always the preferred method because it helps reduce counterfeiting and fraud. If re-branding is authorized, permission to re-brand must be clearly delineated by the QA.

In any event, re-branding distributors should be required to maintain proper traceability documentation and supply it to their customers.

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SECTION 8:

QUALIFICATION VERSUS OTHER APPROACHES

Before embarking on the qualification process, consider whether adding first article testing or specific quality assurance provisions to individual procurement or contract actions would be a more appropriate approach than including a qualification requirement.

First article testing, contract quality assurance provisions, and qualification are related activities. They are all used to provide assurance that an item meets the requirements for a specified performance, quality, and reliability level. One key difference is that the qualification process is independent of any procurement or contract, while first article and quality assurance provisions are part of specific procurements or contract actions. The following definitions apply:

Qualification - Qualification is a process in advance of, and independent of, any procurement or contract action by which a manufacturer's capabilities or a manufacturer's or distributor's products are examined, tested, and approved to be in conformance with specification requirements for listing of products on a QPL or manufacturers on a QML.

First Article Testing - First article testing and approval refers to pre-production models, initial production samples, test samples, first lot samples or pilot lots that are used in evaluating conformance to the specified contract requirements.

Quality Assurance Provisions - Quality assurance provisions are technical requirements in the contract relating to the quality of the product. They also include those contract clauses prescribing inspection, and other quality controls incumbent on the contractor to assure that the product conforms to the contractual requirement.

FACTORS TO CONSIDER IN CHOOSING BETWEEN QUALIFICATION, FIRST ARTICLE TESTING, AND QUALITY ASSURANCE PROVISIONS

Factors which need to be considered when choosing between qualification, first article testing, and quality assurance provisions include product conformance, the cost of qualification program implementation, and procurement lead time/schedule requirements.

PERFORMANCE

The objective of qualification and product performance requirements is to satisfy individual component and overall system requirements. This

approach provides proper levels of engineering oversight, reduces risk, and improves logistic supportability. It also increases assurance of product performance, quality, and reliability at the lowest possible cost to the DoD.

When a qualification requirement is involved, no first article evaluation or additional contract quality provisions are generally necessary because these provisions are already incorporated into the qualification program.

A qualification program has value for manufacturers. The qualification program allows manufacturers to establish standardized product designs and manufacturing and testing processes for a large cross section of their customer base. This approach improves efficiency, quality, and reliability while reducing overall costs to the manufacturers and to their customers. In some industries (like microelectronics) a standard qualification program is the reason many manufacturers continue to produce the high performance product grades that the government needs for military applications.

Use of first article testing or selected quality assurance provisions may achieve equally good results. Consider the following factors, however. Because they are used to determine contractual compliance in specific procurements or contracts, first article testing and quality assurance provisions must be specified in each procurement or contract action.

First article and quality assurance provisions may be difficult to develop for complex technologies because the pool of engineering review and coordination talent may be small. This lack of technical expertise and the resulting poor first article or quality assurance provisions could result in technical variations among the product manufacturers.

However, in situations where the product is bought infrequently, first article testing or specific contract quality assurance provisions may be the preferred approach. When procurement is not urgent, incurring these potential problems may be an acceptable tradeoff. This technique may even cost less than the imposition of a qualification program that will continue indefinitely.

First article testing may be appropriate in the following situations:

- A manufacturer has not previously furnished the product to the government.
- The product has undergone subsequent changes.
- Production has been discontinued for an extended period of time.
- Products acquired under previous contracts have developed problems.

Before the contract is awarded, the specification or contract must specify the first article requirements or specific quality assurance provisions (technical, testing, and other requirements) that must be met before the contract is awarded.

COST

Comparing the costs of instituting a qualification program, or invoking first article testing or quality assurance provisions can be complex and difficult.

In QPL and QML programs, the manufacturer bears all costs associated with the actual product qualification. The manufacturers typically amortize their qualification costs across their entire production schedules. Therefore, the overall product qualification costs per unit are usually very small because they are amortized across a large product population.

Qualification programs are not without cost to the government. Because the QAs establish and maintain qualification programs, the government incurs the manpower and travel costs associated with program management. But these costs are not again incurred by the ultimate customers. In other words, a product is only qualified once, which avoids duplicative and costly qualification testing across many product lines.

If first article and specific contract quality provisions are invoked, the government and each buying organization usually pay the costs up front as part of the specific contract action. These initial costs can be very significant especially if a large number of follow-on procurement actions are required. However, if a product will be bought infrequently, these costs may be less than the cost of creating and maintaining a qualification program.

In selecting the appropriate approach, the overall costs associated with each approach should be carefully considered.

SCHEDULE

Scheduling issues also must be considered carefully. Because qualification is completed prior to contract action, it reduces procurement time. First article testing and quality assurance provisions add to procurement lead time. In some situations these delays may be an acceptable tradeoff, in other cases they may not be.

When procurement is not urgent, the delays caused by the time it takes the product manufacturer to complete the first article tests or quality assurance requirements may be acceptable, and may already be programmed into the procurement cycle.

When requirements cannot be performed as part of a procurement or instant contract action without adding unnecessary delays, burdens, and

costs on the government and the manufacturing base, a qualification requirement may be warranted. By performing comprehensive reviews of manufacturing processes, conformance requirements (testing), product quality, and reliability determinations prior to and independent of a specific procurement action, the government can establish an approved list of manufacturers and distributors. Contracting officers can use the list to solicit potential bidders.

SUMMARY

In summary, qualification, first article, and quality assurance are all complementary processes that seek to reduce the government's risk of purchasing nonconforming and poor quality products.

Qualification is used when circumstances make performance, quality, and reliability review and testing in a specific contract or procurement action impractical or excessively costly. It is also used when extra measures of assurances are needed because of complexity, criticality, or safety. In addition, use of a qualification program can eliminate or reduce in-plant government inspections.

First article and extra quality assurance provisions are not necessary nor usually appropriate for procurement actions when a qualification program is being used to procure the products.

SECTION 9:

JUSTIFICATION OF A QUALIFICATION REQUIREMENT

When specifications or NGSs are written or revised, the Preparing Activity (PA) must justify the need for including a qualification requirement. DoD 4120.24-M recognizes the following justifications:

The time required to conduct the necessary tests as identified in the applicable specification exceeds 30 days (720 hours). The justification must demonstrate that such extensive testing is required and that it would delay delivery to the government. (If those same tests are included in the quality conformance inspection that is normally conducted during the production process, the justification is not acceptable.) In the justification the PA must list the tests, which, if required for product acceptance, would delay product delivery and show the time required to perform each test. Do not list tests that would not cause undue delay under ideal conditions, unless such tests comprise a required sequence of several tests.

Qualification tests require special equipment not commonly available. The specific test equipment should be listed with an explanation of why it is not commonly available.

Qualification tests are for survival or emergency life-saving equipment. The justification must include the hazardous consequence or potential life threat of not performing these tests as qualification tests.

The item is designated as safety critical in the Federal Logistics Information System.

The performance, quality, and reliability of the product are critical and the consequence of a failure may be catastrophic to mission, equipment, safety or life. The justification must describe the requirement and the application, and show how qualification will reduce the risk of failures.

For QPLs and QMLs, the justification to include a qualification requirement is submitted to the DepSO for approval. If the DepSO agrees, the DepSO shall send a copy of their approval along with the specification and supporting justification to DSPO for concurrence. After approval is obtained, the PA for the applicable specification/NGS can include the qualification requirements into the applicable specification or NGS. Subsequently, the PA and QA equitably and fairly enforce the qualification process on all interested manufacturers.

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SECTION 10:

ESTABLISHING THE QPL/QML

Once the qualification requirement has been justified and approved, and all the requirements have been included into the applicable specification, the next step is to establish and maintain the listing.

INITIAL STEPS

Publicize the final qualification requirement to the potential manufacturers. A notice in the *Commerce Business Daily* is the accepted way to notify industry of a new qualification requirement. Individual notices to manufacturers may also be appropriate. The anticipated date that the qualification requirement will be enforced or included in the specification or agency documents should be included in the notice.

At least two sources have to have expressed interest in applying for qualification prior to including a qualification requirement. Actively solicit manufacturers to qualify their products and solicit additional manufacturers to qualify. The goal is to increase competition.

Encourage any manufacturer who desires to qualify his product to review the qualification requirements carefully. The goal is to avoid downstream problems that may result from misinterpretations or lack of understanding of the qualification requirements. Implement a process that will ensure this review is accomplished.

Publish the actual QPL or QML using the format as delineated in the FORMAT FOR A QPL OR QML section of the qualification appendix of DoD 4120.24-M. The responsible Preparing Activity (QA) also ensures that the QPLs and QMLs are submitted to the Defense Automated Printing Services for inclusion into the ASSIST and listed in the DoD Index of Specifications and Standards (DODISS).

Note 1: The listing of a product or manufacturer does not release the manufacturer or distributor from continuous compliance with all provisions of the specification.

Note 2: Manufacturers may advertise or publicize their QPL or QML listings. However, they must not state or imply that their particular product is the only product available, or that the government in any way endorses their product in preference to the other qualified products.

MAINTAINING THE LISTING

Review and evaluate, in a timely manner, all product qualification reports submitted by the manufacturers in accordance with the specification or agency-documented procedures.

The QA is responsible for maintaining the QPL and QML and revalidating the currency of the QPL and QML every two years. The QA may amend, revise, or otherwise publish a new QPL or QML without advance notice. If a qualification requirement is invoked, a contracting officer can only accept a product that has been properly approved and qualified and originates from a manufacturer who was approved and listed on the applicable QPL or QML at the time of contract award. If there is no source, then the documentation must be changed to delete qualification. If a QPL exists, no other listing shall be prepared. Only one listing is authorized.

Withdrawing or removing a manufacturer's qualification approval must follow the reasons outlined in the REMOVAL FROM A LISTING section of the qualification appendix of DoD 4120.24-M.

If the contracting officer is buying the QPL or QML product through distribution, the distributor or dealer shall provide proper traceability to the contracting officer. That traceability will assure the product provided was properly qualified and originated from a QPL or QML approved and listed manufacturer.

Also, a potential manufacturer or distributor who is not on a QPL or QML may submit a bid during the solicitation or pre-solicitation process as long as the original manufacturer of the product has gained qualification and is listed on the applicable QPL or QML at the time of contract award. In other words the contracting officer must ensure that only a fully qualified part from a valid QPL or QML listed source is purchased.

The contracting officer should submit to the QA the names and addresses of manufacturers or distributors who expressed interest in the acquisition but were not included on the applicable list at the time of the award. The QA should then solicit them for possible qualification of their products in preparation for future acquisitions. The QA should assist interested manufacturers or distributors in completing the qualification process. However, under no circumstances can the manufacturer or distributor be in any way given a promise or even the implication of a future award.

SECTION 11:

FACTS AND EXAMPLES

This section describes three typical QML programs at Defense Supply Center Columbus (DSCC) and a Naval Sea Systems Command QPL program.

QML AND QPL EXAMPLES

QML-38535 (AS OF JAN 2002)

Technology Covered: Microcircuits

Number of Qualified Manufacturers: 40

Number of Part Types Qualified: 14,924

Summary of Program: The defense specification MIL-PRF-38535 covers microcircuits. Microcircuits are used extensively in most weapon systems. Many require space or radiation hardness. The QML-38535 was established to ensure that an industrial base of known quality manufacturers for microcircuits would continue and grow.

Why was a QML implemented? The QML program for microcircuits was implemented to support Defense Standardization Program efforts. Use of a QML benefited all parties. Commercial and military product requirements can be integrated, and the product produced without compromising product characteristics or reliability. The DoD can obtain state-of-the-art microcircuits for weapon system applications at greatly reduced cost by leveraging commercial products and best commercial practices. This approach allowed the manufacturer to open up commercial high volume facilities and produce products not previously available to the DoD weapon system builder. Also, it gave the manufacturers the flexibility they needed to reduce manufacturing cost by eliminating screens and tests that didn't add value. This approach has resulted in improved cycle times, lead times, and delivery—and has increased customer satisfaction. The reduced handling and testing has also improved the quality of the product the military procures.

The QML approach is being used because of the rapid changes and advances in the microcircuit industry. These rapid technology advances require a flexible system in order to be timely and cost effective. The QML system addresses these needs by allowing best commercial practices (that is, test optimization programs, in-line process monitors, surrogate qualification vehicles) within or across manufacturing lines, which

provides flexibility to adapt or modify requirements based on advances in manufacturing technologies.

QML-38534 (AS OF JAN 2002)

Technology Covered: Hybrid Microcircuits

Number of Qualified Manufacturers: 45

Number of Part Types Qualified: 922

Summary of Program: The Hybrid Devices Team administers all sourcing and qualification activities as part of the DoD Standardization Program for the QML under MIL-PRF-38534 for hybrid microcircuits (including various multichip modules). The team also provides related engineering assistance and guidance to the military departments, original equipment manufacturers, device manufacturers, and other government agencies (for example, the National Air and Space Administration).

Why was a QML implemented? The QML-38534 program was implemented to provide a means of effectively combining military and commercial programs into a single flexible system. The program standardizes design, manufacturing, and testing requirements. The goal is to provide customers with assurance that the hybrid microcircuits they acquire have the necessary capabilities. Standardization also reduces costs, improves quality and reliability, and shortens lead times.

Due to the myriad of processes and materials in (hybrid) microcircuits, part-by-part qualification is cost prohibitive and time consuming. Therefore, the QML approach is used for hybrid microcircuits because so many different hybrid microcircuits (part numbers) can be built (mostly in very low quantities) using the same processes and materials. The QML approach allows qualification testing to be done on a smaller number of types which can then prove out the processes and materials that will apply to a large number of product types (that is, reduced testing while minimizing risk). The testing required for each part number is then reduced to allow for quick introduction of the product into the marketplace with minimal costs.

QML -19500 (AS OF JAN 2002)

Technology Covered: Semiconductors

Number of Qualified Manufacturers: 30

Number of Part Types Qualified: Approximately 20,000

Summary of Program: MIL-PRF-19500 is open to manufacturers of semiconductors worldwide. Manufacturers must demonstrate that their product designs can meet stringent military operational environments. The

QA performs technical qualification certification audits to assure product designs, process controls, and testing comply with requirements. All qualification testing must be performed at a facility with a laboratory that has been declared suitable by DSCC for the applicable test methods. All manufacturers must submit annual qualification reports that summarize the manufacturing and testing activity that has been performed. They must also report any product failures to the QA. The report includes the supporting corrective actions and any necessary failure analysis.

Why was a QML implemented? Semiconductors are used in numerous military applications and those that are qualified to the defense specification MIL-PRF-19500 are listed in QML-19500. Standardization has been key to minimizing parts proliferation, maintaining quality and reliability, and maintaining suppliers for parts for military weapon systems over an extended period of time. For example, take just one part number—JANTX2N2222A. This part is used to support 413 separate weapon system platforms. Without standardization hundreds of NSNs would have been placed in the logistics systems over the years. In addition, the standard parts covered by the QML allow for competition around a single well defined set of performance, quality, and reliability levels, which helps the government reduce costs, and increases and sustains high quality parts for military environments. Also, given the history of counterfeiting and fraud in the electronic components industry, the availability of traceable QML-19500 parts has proved invaluable to government agencies and OEMs. Use of traceable parts reduces unauthorized part substitutions and the risk of product failure.

QPL-24790 (AS OF JAN 2002)

Technology Covered: Packing Material, Braided, Non-Asbestos

Number of Qualified Manufacturers: 6

Number of Classes/Types Qualified: 4

Summary of Program: MIL-PRF-24790 covers braided non-asbestos packing material in rotating rod, centrifugal, and reciprocating rod pumps handling various fluids and gasses. The material is used in pumps on U.S. Navy surface ships and submarines and is subject to stringent composition and performance controls. The QPL was established to ensure material quality for both nuclear and non-nuclear applications.

Why was a QPL implemented? The high temperatures and pressures in the pumps are potentially very dangerous to ships' personnel if the packing material fails. It is crucial that quality material be available on a

timely basis for critical shipboard applications. The QPL program for packing material was established because the packing material is used in systems that may be classified as critical and are vital to the survivability of the ship. The pump packing material is used in the rotating shafts of propulsion equipment vital to mission effectiveness for combatant ships..

SECTION 12:

DEFINITIONS

Adopting activity is one of the organizational elements of the military departments, defense agencies or civilian agencies responsible for adoption of a non-government standard.

Baseline is a defined set of product design parameters and/or characteristics that are critical to the function, performance, quality and reliability of the product. These parameters/characteristics are baselined (documented) to assure no changes are made without QA review and possible requalification.

Civilian agency is a federal agency other than the Department of Defense. For example, NASA is a civil agency.

Commercial testing laboratory is a laboratory that performs examination and testing for a manufacturer or other military and civilian agencies or group. That laboratory may be operated by, or be under contract to, the government or used by the manufacturer or distributor either in-plant or under contract.

Coordination is the process of having standardization documents (including the qualification requirements) reviewed and commented on by government and private sector organizations.

Dealer is any business organization that sells, conveys, or otherwise transfers a product (not his own) to another party. The dealer performs no manufacturing or testing but may complete the required product traceability documentation. A dealer may sell a manufacturer's product without the manufacturer's control or knowledge.

DepSO is the Departmental Standardization Office that is the top-level office in each military department or defense agency responsible for managing the Defense Standardization Program and ensuring that its Lead Standardization Activities and Standardization Management Activities properly implement the policies, procedures, and goals of the Defense Standardization Program.

DoDISS is the Department of Defense Index of Specifications and Standards. A publication that lists defense and federal specifications and standards, guide specifications, defense handbooks, commercial item descriptions (CIDs), adopted nongovernment standards (NGSs) and other related standardization documents used by the Department of Defense. The DODISS lists all QPLS and QMLs. The DoDISS is a printed subset of information from the ASSIST database.

Distributor is any business entity that distributes the manufacturer's product. Any distributor authorized by the manufacturer to rebrand and distribute a product under the distributor's own brand is included.

DoD 4120.24-M is a document published by the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics) which provides policies and procedures for the Defense Standardization Program (DSP).

DSPO is the DoD Standardization Program Office designated responsible for oversight of the DoD Standardization Program.

First Article refers to pre-production models, initial product samples, test samples, first lot samples or pilot lots used to evaluate conformance to the specified contract requirements.

Laboratory suitability is an official letter from the Qualifying Activity (QA) that grants a laboratory approval to solicit testing for a qualified manufacturer. Suitability may require demonstration of compliance.

Manufacturer is the actual producer of the product. The manufacturer typically performs fabrication or assembly of the final product as defined by the specifications and is responsible for its performance, quality, and reliability. The manufacturer's designation is required on the product.

NGS (Non-Government Standard) is a national or international standardization document developed by a private sector association, organization, or technical society that plans, develops, establishes, or coordinates standards, specifications, handbooks, or related documents. This term does not include standards of individual companies. Non-government standards adopted by DoD are listed in the ASSIST database.

NGSB (Non-Government Standard Body) is a private sector association, organization, or technical society that plans, develops, establishes, maintains, or coordinates NGSs.

PIN (Part Identification Number) is a definitive identifier or part number marking. The actual PIN shall be specified on the applicable specification or agency document. Typically the PIN is marked on the actual product, but if product size precludes such marking, it may be marked in the packaging and/or on the Certificate of Conformance.

Preparing Activity (PA) is the DoD activity, the defense or civilian agency, or NGS body responsible for the preparation, coordination, issuance, and maintenance of standardization documents.

Qualification is a process in advance of, and independent of, an acquisition by which a manufacturer's capabilities or a manufacturer's or distributor's products are examined, tested, and approved to be in conformance with specification requirements, and subsequent approval for or listing of products on a qualified products list (QPL) or manufacturers on a qualified manufacturers list (QML).

Qualified Manufacturers List (QML) is a list of manufacturers' qualified processes and materials at each facility that have been successfully subjected to a defined set of qualification and periodic tests using processes, worst case designs or materials, to verify the end product's design, performance, quality, and reliability meet all the applicable specification requirements.

Qualified Products List (QPL) is a list of products or families of products that have successfully completed the formal qualification process (including all specified periodic tests) that examines, tests, and verifies that a specific product design meets all the applicable specification requirements.

Qualifying Activity (QA) is the activity (either a military activity, civilian or defense agency, or NGS body) that has given responsibility to develop, implement, and maintain the qualification program as specified in the applicable specification.

Re-branding occurs when a product is re-marked or branded as a distributor's own product.

SD-6 is a document published by the Defense Standardization Program Office that provides the provisions governing qualification programs. The document is provided to manufacturers when they apply for qualification.

Traceability is documented evidence that the product supplied is identical (except as permitted by authorized distributors) to the product that was initially manufactured and is in full compliance with all specified specification requirements.